

US009409033B2

(12) United States Patent

Jacobson

(54) LEADLESS CARDIAC PACEMAKER SYSTEM FOR USAGE IN COMBINATION WITH AN IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 14/885,853

(22) Filed: Oct. 16, 2015

(65) **Prior Publication Data**

US 2016/0030757 A1 Feb. 4, 2016

Related U.S. Application Data

(62) Division of application No. 14/318,201, filed on Jun. 27, 2014, now Pat. No. 9,192,774, which is a division of application No. 13/866,803, filed on Apr. 19, 2013, now Pat. No. 8,798,745, which is a division of

(Continued)

(51) **Int. Cl.**A61N 1/39 (2

A61N 1/05 (2

(2006.01) (2006.01)

(Continued)

(52) U.S. Cl.

(Continued)

(10) Patent No.:

US 9,409,033 B2

(45) **Date of Patent:**

Aug. 9, 2016

(58) Field of Classification Search

CPC . A61N 1/3962; A61N 1/3704; A61N 1/3706; A61N 1/0587; A61N 1/3956; A61N 1/3727; A61N 1/056; A61N 1/372; A61N 1/36514; A61N 1/368; A61N 1/37217; A61N 1/3627; A61N 1/37288; H04B 13/005

See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

3,199,508 A 8/1965 Roth 3,212,496 A 10/1965 Preston (Continued)

FOREIGN PATENT DOCUMENTS

EP 0362611 A1 4/1990 EP 1115329 A2 7/2001

(Continued)

OTHER PUBLICATIONS

Advisory Action mailed Aug. 19, 2014 for U.S. Appl. No. 13/277,151, filed Apr. 19, 2013, 5 pages.

(Continued)

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(57) ABSTRACT

A cardiac pacing system comprising one or more leadless cardiac pacemakers configured for implantation in electrical contact with a cardiac chamber and configured to perform cardiac pacing functions in combination with a co-implanted implantable cardioverter-defibrillator (ICD). The leadless cardiac pacemaker comprises at least two leadless electrodes configured for delivering cardiac pacing pulses, sensing evoked and/or natural cardiac electrical signals, and bidirectionally communicating with the co-implanted ICD.

12 Claims, 14 Drawing Sheets



